

REMARKS

The claims have been amended to recite “an aeration stirring tank having at least one baffle”. The amendment to the claims is supported by Figure 4, and page 10, lines 6-10. No new matter is believed to be added by entry of this amendment. Claims 1-5 and 7-10 are active.

The claimed invention is an apparatus and method for treating exhaust gases in which the exhaust gases are treated with an aqueous alkaline liquid in an aeration stirring tank with at least one baffle and having a stirring device comprising a motor, a shaft rotatably connected to the motor, and a blade attached to the shaft. The exhaust gases treated in this manner and discharged from the aeration stirring tank are further treated to remove harmful gases, e.g., with a packed column. Conventional processes and apparatus for treating exhaust gases involve contacting the exhaust gas with either a solid absorbent (dry type) or a chemical liquid (wet type) (present specification at page 1, lines 21-23).

Furthermore, dry type absorbents are expensive, the solid absorbent must be replaced often, and blocking may occur (page 2). Wet type processes are less expensive but generally have low performance, and after treatment, the exhaust gases from the wet processes may still be harmful (page 2, lines 15-22). However, the claimed invention provides substantially improved performance in that “a high removal rate of harmful components from exhaust gases is maintained, blocking due to a solid product can be prevented, and the running cost is low” (present specification at page 3, lines 11-17).

The claims stand rejected under 35 U.S.C. § 103(a) over the combination of the specification at page 1, line 9 to page 3, line 9, Cole, and JP 62-125827 (JP ‘827). The applied references in combination fail to describe or suggest all of the limitations of the claimed invention, there is no reasonable motivation for combining the applied references, and, based on the specification, the claimed invention provides improved performance

compared to conventional processes and apparatus, employing a single process/apparatus for treating exhaust gases.

Page 1, line 9 to page 3, line 9 of the present specification fails to describe an aeration stirring tank having a baffle or a stirring shaft having a blade, as in the claimed invention. As discussed below, Cole describes absorbers, for example packed towers, for treating gases, and therefore also fails to describe the claimed aeration stirring tank.

JP '827 also fails to describe the aeration stirring tank of the present invention. The aeration stirring tank of the present invention has at least one baffle. JP '827 fails to describe a tank having a baffle. Furthermore, the "rotary type fine foam generator" of JP '827 also lacks the stirring blade of the claimed apparatus. Instead, the "rotary type fine foam generator" of JP '827 has a "rotary atomizer" (translation at page 2, column 2, first full paragraph). An example of a rotary atomizer is provided in the attached figure. A rotary atomizer, as shown in the figure, has a cup shaped rotor, rather than a blade attached to a shaft. Thus, the rotary atomizer of JP '827, and the stirring device of the claimed invention are quite different.

Moreover, the aeration stirring tank of the claimed invention functions quite differently from the "rotary atomizer" of JP '827. The stirring device of the claimed invention rotates the liquid at high speed, thereby imparting centrifugal force to the liquid, which causes the depth of the liquid around the central portion of the tank to decrease. Fine bubbles of exhaust gases which pass through the liquid at this portion, i.e., the central portion having a decreased depth, are retained in the liquid for a shorter time due to the reduced depth of the liquid. In order to compensate for this effect, a baffle is placed on the wall of the stirring tank to disturb the rotation of the liquid. In contrast, the atomizer of JP '827 does not have a stirring blade, and therefore the strong rotation of the liquid in the tank is not generated, and there is no need to install a baffle in the aeration tank. Thus, the mechanism

of formation of fine bubbles of exhaust gases in the claimed aeration stirring tank, and that of an atomizer are quite different. Thus, the “rotary atomizer” of JP ‘827 is quite different from the claimed invention, because it lacks a baffle on the stirring tank, and a blade on the stirring shaft. Moreover, the “rotary atomizer” of JP ‘827 functions quite differently. Accordingly, the combination of the applied references neither anticipates nor suggests the claimed invention.

The present specification (page 1, line 9 to page 3, line 9) states that “removing apparatus are roughly classified into two types such as dry type apparatus employing a solid absorbent and wet type apparatus employing a chemical liquid.” In other words, conventional treating equipment are either of the wet type or dry type, but not combinations of the two. Furthermore, both wet and dry type treatments and apparatus have significant problems. Nowhere does the above-noted section of the present specification describe the *combination* of a wet type and dry type apparatus.

Cole describes gas purification using absorbers, for example packed towers. However, Cole fails to describe the combination of an absorber column with a different type of treatment apparatus. In other words, Cole only describes treating gases with an absorber column.

JP ‘827 describes treating gases with a “rotary type fine foam generator.” However, JP ‘827 also does not describe combining the rotary type fine foam generator with another type of gas treatment apparatus. Thus, none of the applied references individually describe *combining* two different gas absorbing processes or apparatus. Accordingly, the applied prior art references fail to provide the necessary motivation for such a combination.

Accordingly, and for the reasons stated above, Applicants respectfully request that the rejections be withdrawn.

Finally, Applicants note that the Examiner has indicated that the present action is "final", yet acknowledges at page 2 of the Official Action that the finality of the previous Official Action has been withdrawn by virtue of the Request for Continued Application filed August 21, 2002. Accordingly, Applicants respectfully request that the finality of the present Official Action be withdrawn.

Applicants respectfully submit that the present application is now in condition for allowance. Early notification thereof is earnestly solicited.

Respectfully submitted,

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